

QA 41 – Energy and Protein needs for Children with Motor Delay

QUESTION:

I could use a good resource for energy and protein estimates. Would you recommend ADA Pediatric Manual of Clinical Nutrition or another book or resource?

Currently, I need to estimate needs for an obese 4 YO female with motor development delays at 21 months. My resource library is providing little on explicit energy estimates for young kids. If I extrapolate from the RDA's, I get 90 kcal/kg and 1.2 gm PRO/kg (I would apply to IBW). The energy really seems too high to me. Do you think this is reasonable? If not, what would you suggest for a kcal/kg and/or PRO gm/kg assignment?

ANSWER:

Calculating explicit nutrient needs for children with lower metabolic needs is difficult in part because children have highly individual levels of energy reducing physiologic impairments such as hypotonia, static encephalopathy, or other neurological injuries. There is also little documented information to use as guidance in this regard.

In general, with the exception of infants, energy needs for this population is calculated by use of calories per length or height instead of calories per weight. Given the predominance of reduced lean body mass for this patient population use of calories per weight often over-estimates energy needs and places the child at risk for suffering physiological complications associated with obesity. Energy recommendations for children with low calorie needs are categorized into low, moderate, and high levels depending on the degree of impairment. Suggested calorie levels for these categories are 7-9, 9-11, and 12-15 calories per centimeter of height respectively. Because energy needs are dependent on numerous factors individual to each child, it is important to conceptualize the first energy estimate as a "starting point" which requires close monitoring with adjustment according to information provided on biweekly or monthly three day diet records and growth measurements.

Protein needs may also be lower for children with lower calorie needs but there have been no clinical studies completed to support or dispute this at this time. Until further information is available use of RDA for age is suggested. For a complete review of information available and clinical recommendations for feeding children with low calorie needs please see reference 2.

References:

- 1) NUTRITION FOCUS Newsletter published by the Center on Human Development and Disability, University of Washington, Seattle, Washington. Subscription information can be available at CHDD, University of Washington, Box 357920, Seattle, WA., 98195-7920 (206.685.1297) or <http://depts.washington.edu/chdd/UAP/CO/CO29.html>.
- 2) Sandrock M., Feeding the Child with Very Low Energy Needs. NUTRITION FOCUS Newsletter 12:1, 1997. University of Washington, Seattle, WA.

- 3) Food and Nutrition Board. Recommended Dietary Allowances. 10th ed. Washington DC: National Academy Press; 1989.
- 4) The Pediatric Nutrition Practice Group. Pediatric Manual of Clinical Dietetics. American Dietetic Association, 1998.
- 6) Queen P, Helm, K, Lang C. Handbook of Pediatric Nutrition. 2nd ed. Apsen Publishers, Inc., 1999.
- 7) Hendricks K, Walker W. Manual of Pediatric Nutrition. B.C. Decker, Inc., 1990.
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